RMRS Rocky Mountain Remediation Services, L.L.C
protecting the environment

INTEROFFICE CORRESPONDENCE

DATE December 9, 1997

TO F P Hughes, Senior Vice President, Operations, Bldg T893A, X5841

FROM W J McAndrew, Acting Director E/C/D/F, Bldg T130F, X5454

SUBJECT MANAGEMENT OF BERYLLIUM (Be) CONTAMINATED WASTES AT ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS) —WJM-113-97

Ref T A Hopkins ltr to C L Guthrie, TAH-001-97, Same Subject, October 21, 1997

PURPOSE
The purpose of this correspondence is clarification of Directive No 3 (attachment 1) regarding the management of Be contaminated materials The proposed clarification would distinguish between Be contaminated materials destined for free release to the public and Be contaminated wastes It would allow Be contaminated wastes to be managed without decontamination

DISCUSSION
The above referenced letter (attachment 2) was prepared by Ted Hopkins of Environmental Compliance that proposes clarifying RMRS's directive on Be management at RFETS It is important to clarify that the standards identified for free release of Be contaminated materials to the public, does not apply to Be contaminated wastes destined for disposal Such clarification will expedite cleanup in all buildings for which Be contaminated wastes are found It makes little sense to decontaminate a waste prior to disposal unless required by regulation to do so Neither waste management regulations nor worker safety requirements provide such a driver Even if the Be wastes are RCRA regulated, decontamination is not required On-site worker safety requirements will be identified in the Activity Hazards Analysis (AHA) that is conducted by Industrial Hygiene personnel Off-site worker safety requirements are the responsibility of the off-site disposal facility A disposal facility may require containerization or shrink wrapping of wastes to reduce the potential Be exposure to their workers Waste Management will contact the appropriate disposal facility to ensure that our waste streams meet the disposal facility's Waste Acceptance Criteria (WAC), whatever they are

Michael Findley and John Schmuck have reviewed this document and their comments have been incorporated In addition, Karan North (Kaiser-Hill Compliance) agrees that free release standards do not apply to wastes

RESPONSE REQUIREMENTS
Please review the attached document After appropriate review and/or comment, it is our hope that appropriate modification to RMRS Directive regarding the management of Be wastes can be made as outlined in the attached document We will be happy to make those modifications, per your directions If you have any questions or clarifications in regard to the issues discussed, please contact Ted Hopkins at extension 7652 or digital page 4119 or call me at the above extension

TAH alk

Attachments
As Stated (2)

cc
M E Findley
T A Hopkins
G R Konwinski
J W Patterson
J P Schmuck

RMRS Rocky Mountain Remediation Services, L.L.C.
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DIRECTIVE

BERYLLIUM HANDLING PRACTICES AND LEVELS

OPS-DIR-003
Revision 0
Date Effective 03/24/97

APPROVED _____
Sr Vice President, Operations

RMRS Beryllium Practices at Rocky Flats

1.0 PURPOSE/SCOPE

The purpose of this directive is to provide guidance for RMRS employees to assure protection of human health and the environment when beryllium or beryllium contaminated materials are present. This directive identifies administrative practices for protection of personnel and the environment at levels that are as low as reasonably achievable (ALARA). The information in this procedure does not supersede or replace the requirements of other regulatory documents or site procedures, but clarifies necessary and sufficient practices for the protection of personnel and the environment when beryllium is present.

2.0 REGULATORY VALUES

Protective levels for beryllium contamination have been specified in regulations for air effluent, surface discharge and listed hazardous waste. These values do not apply to industrial hygiene (IH) concerns associated with beryllium contamination on internal and external surfaces. The Personnel Exposure Limit (PEL) for beryllium applies to all activities and is monitored by air sampling equipment specified by IH personnel. This OSHA 8-hour, time-weighted average exposure limit of 2 micrograms per cubic meter, is protective of personnel during beryllium mining or milling operations, but no such value exists for worker's protection from surface contamination. Thus, administrative practices will be utilized to accommodate safety concerns until a regulation directly applies.

REGULATIONS	REGULATORY VALUE	COMMENTS
CAA (HAP&NESHAP)	250lb/yr, 10g/24hr* & 0.01ug/30d ave**	*CAQCC Reg8 & 40CFR61.32 **Ambient concentrations
CWA	4ppb	CWQCC seg 4&5
RCRA (listed) (LDR)	None unless pure 0.014 NWW 0.82 WW	

3.0 ADMINISTRATIVE PRACTICES

Any person who works with beryllium or has the potential for exposure to beryllium, as determined by IH, will be placed on the medical control program Participants in this program receive specialized training and may be subject to medical surveillance

3 1 General Housekeeping

Adequate protection of personnel requires that IH assess the potential beryllium exposure for each worker space This evaluation will be documented in building or project manager's files Discovery of an area (by smear sampling) having beryllium dust in excess of 25 ug/square foot (an industrial standard and a value reflected in site procedures), will require beryllium cleanup IH will write a beryllium abatement plan addressing the training, PPE, and cleanup actions Cleanup will, at a minimum, include qualified beryllium workers, surface wetting to suppress resuspension, wet/dry vacuuming or wet wiping to remove the dust, and breathing zone monitoring during cleanup operations A second smear sampling will be conducted to assure cleanup goals are achieved Annual sampling is required for these areas exceeding the 25 ug/ft2 to verify the absences of contamination as long as RMRS workers remain in the area

4.0 GENERATION

During the project planning phase, characterization is required to determine the potential hazards, as well as, the amount/type of waste that will be generated All beryllium containing wastes and beryllium contaminated equipment will be handled to minimize the potential exposure Beryllium is not a hazardous waste, unless it is pure powered beryllium found in a lab container RCRA does not regulate beryllium except when pure Thus, beryllium is managed in a manner that minimizes environmental releases and is protective of human health Beryllium waste will be bagged/labeled and managed for its other constituents If surface values for beryllium exceed the 25 ug/ft2 smearable, these areas should be decontaminated utilizing the housekeeping methodology

5.0 TRANSPORTATION

Movement of beryllium waste and equipment containing beryllium on and off-site is controlled by DOT regulations Transportation of beryllium waste requires double bagging and labeling These bags should be placed inside a proper DOT regulated container as required by the regulated constituents Characterization data and a regulatory evaluation are necessary to document the shipment Materials contaminated with or containing beryllium have no regulatory requirements other than the DOT shipping regulations Waste containing beryllium has LDR requirements specified in 6 CCR 1007-3 section 268 of the CHWA

Transferring of beryllium contaminated equipment from RFETS to DOE or other government sites will be completed by encapsulating the equipment in the equivalent of "double bagging " labeling the exterior of

the shipping container with "surfaces potentially contaminated with beryllium," and forwarding documented process knowledge of the equipment or material to the next site

Release of beryllium contaminated equipment or material leaving the Site to areas other than DOE or any government facility, will only be accomplished with DOE written approval The documentation process shall include, at a minimum, the following items

1 Describe the materials to be released and characterization data,
2 Provide beryllium characterization data & decontamination information,
3 Document shipping location and complete packaging and labeling, and
4 Forward all information to DOE, RFETS and receive approval for the shipment

Waste contaminated with beryllium will be regulated for the other constituents present, and forwarded with LDR documentation for beryllium to the disposal site Contact Waste Management for specific documentation for processing

6 0 CONTACT PERSONNEL

If there are questions on this guidance or if additional areas need clarification, contact Ruth McCafferty of RMRS Industrial Hygiene, or Gary Konwinski, the RMRS Environmental Manager

7.0 REFERENCES

Additional information on beryllium is available from the "Kaiser-Hill Position Paper on Beryllium," WAH-018-97 (see Appendix A)

RMRS Rocky Mountain Remediation Services, L L.C
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INTEROFFICE CORRESPONDENCE

DATE October 21, 1997

TO C L. Guthrie, Engineering/Construction/Decommissioning/Facilities, Bldg T130F, X7419

FROM T A Hopkins, Environmental Compliance, Bldg T130F, X7652

SUBJECT MANAGEMENT OF BERYLLIUM (Be) CONTAMINATED WASTES AT THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (RFETS) — TAH-001-97

PURPOSE
The purpose of this correspondence is to

- Clarify that Kaiser-Hill Company, L L C (K-H)/ the Department of Energy's (DOE) "zero" added Be standard applies solely to excess equipment (and not to wastes)
- Modify Rocky Mountain Remediation Services, L L C (RMRS) Directive regarding Be to allow management of Be wastes without decontamination

M E Findley and J P Schmuck have reviewed the document and their comments have been incorporated into this draft

DISCUSSION
The effect of K-H/DOE's adoption of the "zero" Be standard for excess equipment and material is that there is no longer a recycling or reuse "path forward" for these items Few Facility or Project Managers will sign a release that equipment is 100% Be free Equipment for which a certification is not signed will become "Be contaminated" by default and subsequently a "solid waste " A similar situation occurred when DOE's "No Added Radioactivity Standard" was adopted A significant volume of material became "rad" by default as managers refused to certify that no radioactivity had been added

Free release standards for excess equipment and materials must be established at RFETS if Decontamination and Decommissioning (D&D) operations are to continue in a cost effective manner However, establishing "free release" criteria for excess equipment is outside the scope of this document The brief discussion of the zero added Be standard included, in this document, is added simply to

1 Verify that neither DOE nor K-H have expanded the "zero" added Be standard to wastes*

2 Point out that while this standard is in place, a significant volume of equipment that previously could have been reused or recycled will now be managed as wastes

**Note Discussions with K-H, Environmental Safety and Health, and Environmental Compliance personnel have confirmed that the "zero" Be standard was never intended to apply to wastes*

The most significant regulatory requirements associated with Be contaminated waste, is derived from worker safety requirements (Occupational Safety and Health Act [OSHA] and a new proposed DOE Directive #440) OSHA standards are based on sampling Be particulate content in the air and not on the surface of material The 25 ppb per 100 cm^2 surface standard found in the RFETS procedures was taken from the Atomic Energy Act in the early 1950s Exactly how

this standard was first extrapolated is now lost in history However, it may be that it was easier to measure surface wipes and estimate potential air concentrations than perform air sampling

The existing OSHA Be standards are incorporated into D&D operations through Hazards Analysis and Job Safety Analysis These documents will identify all potential hazards and the proper controls (personal protective equipment [PPE], engineering, and administrative controls that RFETS Be workers should take to control the spread of Be contamination and protect worker safety

The removal of Be contamination from waste through decontamination prior to disposal is not required by any regulation. Decontamination would only generate more waste and prolong the potential exposure time to the worker It does not make sense to decontaminate a waste prior to disposal As long as the worker's safety and health are protected, there should be no limit (e g , 25 ppb) on Be contamination of a waste Therefore, the RMRS Directive regarding Be management should be amended to reflect the following practices

BERYLLIUM WASTE MANAGEMENT AT ROCKY FLATS

The following elements comprise D&D's recommended "Standard Operating Plan for Beryllium Contaminated Waste"

1 Clarify that the "zero" added Be standard applies solely to excess materials/equipment and not to wastes There should be no restrictions on handling Be contaminated wastes based on the Be content or surface contamination

2 The major regulatory driver, in regard to Be contaminated wastes, is worker safety Worker safety concerns will be identified by conducting a Hazards Analysis and/or Job Safety Analysis* on any D&D project where a worker has the potential of encountering Be contamination These documents will identify all hazards associated with the proposed operations and the proper safety controls needed to protect worker safety

3 Prior to generation, characterize all solid waste expected to be managed by this project, including Be contaminated wastes, in accordance with State of Colorado 6 CCR 1007 3, Section 262 11

4 Develop a Waste Management Plan for these "solid wastes " This plan will identify the types (low-level waste, Resource Conservation and Recovery Act [RCRA] hazardous, mixed waste, industrial, etc) that will be generated, volumes, packaging requirements, on-site storage, and final disposition of the waste The generators will need to check with Waste Management to ensure that the appropriate facility is selected and that the Waste Acceptance Criteria for that facility allows the facility to accept Be contaminated wastes

5 Special waste management plans may be required for specific wastes such as Asbestos, Be, radioactive contamination, etc

6 In support of DOE's pollution prevention initiative, decontamination of Be contaminated wastes destined for disposal will be conducted only when authorized in a Be work plan

7 All wastes contaminated with Be will be handled in a manner to reduce the potential exposure to workers (e g , vacuuming, containerized, shrink wrapped, boxed, etc) in order to reduce or eliminate worker exposure

8 Certified waste generators will package Be contaminated wastes and ensure that any special handling requirements are met For example, if the material meets a Department of Transportation (DOT) hazard class (i e , pyrofonc and/or Class 1, 2, or 3 Radioactive) special handling/placarding restrictions apply

**Note The Hazard Analysis and/or Job Safety Analysis will be evaluated by Mike Findley's group ES&H will determine the appropriate worker safety requirements for D&D workers removing Be contaminated wastes in compliance with DOE Orders and Directives*

BACKGROUND INFORMATION

ZERO ADDED BERYLLIUM STANDARD

There has been a great deal of discussion regarding the proper management of Be contaminated equipment/materials at RFETS The current consensus of opinion is that only materials with a "zero" probability of Be contamination will be released to the public as government excess This concept basically corresponds with DOE's "no added" radioactivity standard This position was first put in writing, in a March 20, 1997, K-H interoffice memorandum from M D Brailsford curtailing off-site shipment of suspect internally contaminated Be equipment to the public or other government agencies (excess equipment) This position was based on legal advice and a minority opinion by member(s) of K-H's Health and Safety Committee

The Health and Safety Steering Committee for K-H was charged with developing and recommending a position on Be contaminated excess equipment The Health and Safety Steering Committee consensus recommended the adoption of a nine microgram per square foot residual contamination limit on exposed surfaces as a maximum allowable concentration for release of equipment and materials to the public This was a conservative position that exceeded the industry standard of 25 ug/ft^2

A dissenting opinion within the Steering Committee proposed a "zero" contamination level because of the unknown health effects associated with Be exposures on humans This opinion stated, that even at the nine microgram per square foot level, there still would be significant risk and liability incurred with the release of property contaminated with Be

On December 26, 1996, S J Bensussen, General Counsel for K-H, responded to the Be issue by stating that "The overriding concern is for the health and safety of the public who might purchase or come into possession of excess property from Rocky Flats It should seem obvious that the low risk legal position is the same as the '0' contamination position In fact, the no risk legal position is that we don't release or sell excess property that we aren't 100 percent certain doesn't contain residual Be contamination However, if that is not a practical solution, then my suggestion is that, first, we include language in the sales documents, which,

- puts the purchaser on notice that the equipment/property may have been exposed to Be, and
- includes an acknowledgment from the purchaser of the potential health effects to Be, and
- that the purchaser accepts the property notwithstanding "

A "zero" Be standard has had the effect of stopping Property Utilization and Disposal's (PU&D) excessing of all Be contaminated or potentially contaminated equipment If Project Managers/Facility Managers will not sign documentation that there is zero Be present, this equipment will be managed as a "solid waste " A consortium of DOE's contractors here at RFETS (K-H, RMRS, Safe-Sites of Colorado, etc) and DOE should be tasked with establishing "free release" criteria for useable equipment contaminated with Be

BACKGROUND REGULATORY DRIVERS

Requirements for the treatment, storage, and disposal, of "RCRA solid wastes" are prescribed by company procedures and/or state/federal rules and regulations Be contaminated equipment/materials that can no longer be used without reclamation would meet the RCRA definition of solid waste In Colorado, all solid waste must be characterized in accordance with 6 CCR 1007 3, Section 262 11 to determine if the solid waste is also a RCRA hazardous waste

RCRA REGULATION OF BERYLLIUM

RCRA regulates or will regulate Be in several forms

1 As an unused pure commercial chemical product (dust) Pure, unused Be dust when disposed, has the Environmental Protection Agency (EPA) Waste Code of P015

2 As a contaminant of concern associated with other specified RCRA hazardous wastes. Certain waste streams identified in 40 CFR 268 40 must also meet the UHC standards of 40 CFR 268.48. Be is one of over 200 contaminants listed as a UHC in 40 CFR 268 48 EPA Waste Codes that trigger UHC standards include: certain D001, D002, D003 subcategories; D012-D017 (nonwastewaters), and D018-D043

3 In May 1998, the Land Disposal Restriction Phase IV standards will be finalized At that time, metal wastes with EPA Waste Codes D004-D011 will be subject to the UHC standards RCRA metal wastes in storage, at the time this rule becomes effective, will be subject to the more stringent treatment standards associated with UHC and will undoubtedly require new characterization The cost associated with testing for all UHC is from $2,000 to $3,000 These costs and the subsequent treatment of these wastes could represent a significant impact to RFETS's already tight budget It is imperative that RFETS move expeditiously to manage these wastes prior to the effective date of the regulations to reduce characterization and treatment costs

Note Be, in and of itself, is not a characteristic RCRA metal (261 Subpart C) The RCRA characteristic metals that have Toxicity Characteristic Leaching Procedure regulatory values and associated EPA Wastes Codes are D004-arsenic, D005-barium, D006-cadmium, D007-chrome, D008-lead, D009-mercury, D010-selenium, and D011-silver

DOT REQUIREMENTS

The DOT has special handling and packaging requirements for Be only if the material is either pyrofonc (Be dust in sufficient quantities to meet this hazard class), or a Class 1, 2, or 3 radioactive material

OSHA AND HEALTH AND SAFETY PRACTICES (HSP) MANUAL

OSHA has established air standards for Be which were adopted on-site through the HSP Manual,1-15310-HSP-13 04, adopted August 28, 1992 This procedure applies to Be processing or those associated with Be and Be support operations

Be operations were defined as any operation involving the use of a compound greater than 0 1% Be where there is some potential for airborne Be concentration to exceed 0 5 ug/m^3 This broad definition would apply to any operation (e g , D&D of a building) where Be dust was present at, or above, the prescribed concentrations This document established the following standards for on-site operations

- RFP Action level
  0 5 micrograms per cubic meter over an 8-hour period collected in breathing zone air sample techniques

- OSHA's PELs
  Two micrograms per cubic meter for any 8-hour work shift of a 40 hour work week,
  Five micrograms per meter as an acceptable ceiling concentration, except for the time period and concentration defined on the acceptable maximum peak,
  Twenty-five ug/m^3 as an acceptable maximum peak above the acceptable ceiling concentration for a maximum of 30 minutes

Although this procedure has not been amended since 1992, the standards set in this document control air borne concentrations of Be during operations at RFETS, today

Note OSHA has not established any worker's safety standards regarding an acceptable amount of Be on any surface The route of exposure for which OSHA is concerned appears to be solely inhalation and/or ingestion

RMRS DIRECTIVES REGARDING BERYLLIUM OPERATIONS

On March 24, 1997, F P Hughes, Senior Vice President, Operations RMRS, issued a Directive regarding Beryllium Handling Practices And Levels This document expanded upon K-H's "zero" added Be standard in that it addressed both Be contaminated equipment and wastes In regard to wastes, this Directive required that

- All Be containing wastes and Be contaminated equipment be handled to minimize the potential of exposure
- Be wastes be bagged/labeled and managed for its other constituents
- If surface values for Be exceed 25 ug/ft^2 smearable, these areas should be decontaminated using the "General Housekeeping Standards" identified in the Directive

The General Housekeeping Standards specified in this Directive requires that

- Industrial Hygiene (IH) assess the potential Be exposure for each worker's space
- Areas with Be contamination in excess of 25 ug/ft^2 will require cleanup.
- IH will write a Be abatement plan addressing training, PPE, and cleanup actions.
- Workers conducting operations in areas with Be contamination must be qualified
- Surface wetting to suppress re-suspension
- Wet/dry vacuuming or wet wiping to remove dust
- Breathing zone monitoring during cleanup operations
- Second smear sampling to assure cleanup goals
- Annual sampling of areas

RESPONSE REQUIREMENTS
No response is required Please forward this correspondence to Fred Hughes After appropriate review and comment resolution, this correspondence should be incorporated in RMRS work packages as an approved policy for the management of Be contaminated wastes

If you have any questions regarding this matter, please contact me

TAH alk

cc
K D Trice

bcc
M E Findley
J P Schmuck